15.242: LTAR - Effluent Loading Rates

(1) The effluent loading rates set forth below are adjusted to account for the long term acceptance rate (LTAR) of the proposed soil absorption system. The LTAR is limited in large part by both the texture of the most hydraulically restrictive soil layer included within the four-foot zone beneath the proposed soil absorption system and the formation of a biomat based on the strength of effluent applied to the soil. As such the effluent loading rates have been based on the strength of typical settled sanitary sewage and may be adjusted proportionately downward if the proposed effluent strength is determined by the local approving authority or the Department to exceed that of typical sanitary sewage. Soil textural classes and soil types comprising the classes are defined in 310 CMR 15.243 and 310 CMR 15.244.

(a) The following effluent loading rates shall apply prior to January 1, 2004:

EFFLUENT LOADING RATE gpd/sq.ft (cm/day)

PERC. RATE (min./inch)	SOIL CLASS CLASS I	CLASS II	CLASS III	CLASS IV
≤5	.74 (3.0)	0.60 (2.5)	-	-
6	0.70 (2.9)	0.60 (2.5)	-	-
7	0.68 (2.8)	0.60 (2.5)	-	-
8	0.66 (2.7)	0.60 (2.5)	-	-
10	-	0.60 (2.5)	-	-
15	-	0.56 (2.3)	0.37 (1.5)	-
20	-	0.53 (2.2)	0.34 (1.4)	-
25	-	0.40 (1.6)	0.33 (1.3)	-
30	-	0.33 (1.3)	0.29 (1.2)	-

Loading Rate Criteria Listed Below Apply Only to the Upgrade of Existing Systems pursuant to 310 CMR 15.405(1)(c) or Systems Constructed pursuant to 310 CMR 15.417.

40	-	-	0.25 (1.0)	-
60	-	-	0.15 (0.6)	0.15 (0.6)

(b) The following effluent loading rates shall apply as of January 1, 2004:

EFFLUENT LOADING RATE gpd/sq.ft (cm/day)

PERC. RATE (min./inch)	SOIL CLASS CLASS I	CLASS II	CLASS III	CLASS IV
≤5	.74 (3.0)	0.60 (2.5)	-	-
6	0.70 (2.9)	0.60 (2.5)	-	-
7	0.68 (2.8)	0.60 (2.5)	-	-
8	0.66 (2.7)	0.60 (2.5)	-	-
10	-	0.60 (2.5)	-	-
15	-	0.56 (2.3)	0.37 (1.5)	-

20	-	0.53 (2.2)	0.34 (1.4)	-
25	-	0.40 (1.6)	0.33 (1.3)	-
30	-	0.33 (1.3)	0.29 (1.2)	-
40	-	-	0.25 (1.0)	-
50	-	-	0.20 (0.8)	0.20 (0.8)
60	-	-	0.15 (0.6)	0.15 (0.6)

(2) Effective January 1, 2004, the effluent loading rates set forth in 310 CMR 15.242(2) may be used in place of those listed in 310 CMR 15.242(1)(b) when the effluent from a septic tank, installed in compliance with 310 CMR 15.223, is distributed over the soil absorption system using pressure distribution designed in compliance with 310 CMR 15.254(2).

SEPTIC TANK EFFLUENT LOADING RATE WITH PRESSURE DISTRIBUTION
gpd/sq.ft (cm/day)

PERC. RATE (min./inch)	SOIL CLASS CLASS I	CLASS II	CLASS III	CLASS IV
40	-	-	0.29 (1.2)	
50			0.25 (1.0)	0.25 (1.0)
60	-	-	0.20 (0.8)	0.20 (0.8)

15.243: Types of Soil Textural Classes

(1) The following soil textural classes apply to soil types of which they are composed:

CLASS I	Sands, Loamy Sands
CLASS II	Sandy Loams, Loams
CLASS III	Silt Loams, Sandy Clay Loams with less than 27% clay, Silt
CLASS IV	Clays, Silty Clay Loams, Sandy Clay Loams with 27% or more clay, Clay Loams and Silty Clays

15.244: Types of Soils

Sands:	Soil is 85% or more sand and the percentage of silt plus 1.5 times the percentage of clay is 15 or less.
Loamy sands:	At the upper limit soil is 85 to 90% sand and the percentage of silt plus 1.5 times the percentage of clay is 15 or less; at the lower limit, soil is 70 to 85% sand and the percentage of silt plus twice the percentage of clay is 30 or less.
Sandy loams:	Soil is 20% or less clay and 52% or more sand and the percentage of silt plus twice the percentage of clay exceeds 30; or soil is less than 7% clay, less than 50% silt, and between 43 and 52% sand.
Loam:	Soil is 7 to 27% clay, 28 to 50% silt, and less than 52% sand.

Silt loam:	Soil is 50% or more silt and 12 to 27% clay; or 50 to 80% silt and less than 12% clay.
Silty clay loam:	Soil is 27 to 40% clay and less than 20 sand.
Clay:	40% or more clay, less than 45% sand, and less than 40% silt.
Silt:	80% or more silt and less than 12% clay.
Sandy clay loam:	20 to 35% clay, less than 28% silt, and more than 45% sand.
Clay loam:	27 to 40% clay and 20 to 46% sand.
Sandy clay:	35% or more clay and 45% or more sand.

15.245: Soil Absorption System Siting Requirements

(1) Prior to January 1, 2004, new systems shall not be sited in areas with percolation rates slower than 30 minutes per inch. Effective January 1, 2004, new systems shall not be sited in areas with percolation rates slower than 60 minutes per inch.

(2) When recorded percolation rates are between those listed in 310 CMR 15.242, the next slower rate shall be used for design purposes.

(3) Prior to January 1, 2004, soils with percolation rates between 30 - 60 minutes per inch may only be used for upgrade of existing systems where no other suitable area for sewage disposal is available and where approval has been granted in accordance with 310 CMR 15.405 (local upgrade approval). This limitation shall not apply subsequent to January 1, 2004.

(4) Soils with percolation rates in excess of 60 minutes per inch are impermeable and shall not be used for the construction of a soil absorption system except in conjunction with a tight tank approved by the Department pursuant to 310 CMR 15.260 and 15.261.

(5) Surface and subsurface drainage shall be directed away from the soil absorption system.

15.249: Design Criteria for Soil Absorption Systems

(1) Every soil absorption system shall consist of one or more trenches, beds, fields, pits, galleries or chambers.

(2) Effluent disposal area requirements shall be determined in accordance with 310 CMR 15.242.

(3) System designs employing equipment designed to distribute effluent without the use of aggregate (*i.e.*, "gravelless systems") are prohibited except in accordance with the procedures set forth at 310 CMR 15.280 through 15.289.

(4) Soil absorption systems for Class III and IV soils with percolation rates greater than 30 minutes per inch shall not include beds or fields except in accordance with 310 CMR 15.255.

15.405: Contents of Local Upgrade Approval

(1) In granting local upgrade approvals pursuant to 310 CMR 15.404(2) where full compliance as defined in 310 CMR 15.404(1) is not feasible, the local approving authority shall consider the impact of the proposed system and shall vary to the least degree necessary the requirements of 310 CMR 15.100 through 15.293 so as to allow for both the best feasible upgrade within the borders of the lot, and have the least effect on public health, safety and the environment. The local approving authority is allowed to diverge from the goal of full compliance only to the extent necessary to achieve a feasible upgrade. In determining whether full compliance is feasible, the approving authority should appropriately consider not only physical possibility as dictated by the conditions of the site, but also the economic feasibility of the upgrade costs. The approving authority should emphasize protection of water resources and treatment of the sanitary sewage. Absent conditions which would result in a different outcome based on best professional judgment, the options set forth below should be considered in the order in which they appear with 310 CMR 15.405(1)(a) being the first option to be considered and rejected or adopted and 310 CMR 15.405(1)(i) being the last option to be considered and rejected or adopted:

(a) Reduction of system location setbacks otherwise established in 310 CMR 15.211 for property lines provided that a survey of the property line shall be required if a component is to be placed within five feet of the property line, and no such reduction shall result in the soil absorption system being located less than ten feet from a soil absorption system on an abutting property;

(b) Reductions of system location setbacks from cellar wall, swimming pool, or slab foundations;

(c) Placement of the leaching structure within an area where percolation rate is between 30 and 60 minutes per inch, in accordance with 310 CMR 15.242, for applications filed prior to January 1, 2004;

(d) Up to a 25% reduction in the required subsurface disposal area design requirements;

(e) Where upgrade is required pursuant to 310 CMR 15.303(1) because it is within Zone I of public well or within 100 feet of private well, relocation of the well. Any relocation of a public well shall be performed pursuant to 310 CMR 22.00 (water supply source approval);

(f) Reduction of system location setbacks from bordering vegetated wetlands;

(g) Reduction of system location setbacks from surface waters, salt marshes, inland and coastal banks, certified vernal pools in accordance with 310 CMR 15.211(1)[2], leaching catch basins, dry wells, or surface or subsurface drains other than those which discharge to surface water supplies or tributaries thereto;

(h) Reduction of system location setbacks from water supply lines, private water supply wells (but not within 50 feet of the well), tributaries to surface water supplies, surface water supplies, but not within 100 feet of the surface water supply or tributary thereto or open, surface or subsurface drains which discharge to surface water supplies or tributaries thereto.

(i) the local approving authority may reduce the required four foot separation (in soils with a recorded percolation rate of more than two minutes per inch) or the required five foot separation (in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the soil absorption system and the high groundwater elevation only if all of the following conditions are met:

1. An approved Soil Evaluator who is a member or agent of the local approving authority determines the high groundwater elevation.
2. A minimum three foot separation (in soils with a recorded percolation rate of more than two minutes per inch) or a minimum four foot separation (in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the soil absorption system and the high groundwater elevation is maintained.
3. The system is a failed or non-conforming system serving an existing building with a design flow of less than 2,000 gpd
4. No increase in design flow or square footage of the building is allowed.
5. No reduction in required leaching field size or setbacks from public or private wells, bordering vegetated wetlands, surface waters, salt marshes, coastal banks, certified vernal pools, water supply lines, surface water supplies or tributaries to surface water supplies, or drains which discharge to surface water supplies or their tributaries, is allowed.

15.417: Variances from Percolation Rate

(1) To assist in determining the advisability of revising the slowest allowable percolation rate as set forth in 310 CMR 15.245, the Department may permit the construction of up to 20 single family dwellings per year in accordance with 310 CMR 15.417. All other provisions of 310 CMR 15.000 shall apply to such sites.

(2) Process. No earlier than March 31, 1995 the Department shall publish a request for proposals informing applicants how to apply for such approvals, including any deadlines, information requirements, and preference criteria. A completed application shall include a proposed monitoring plan, and a letter from the local approving authority stating its support for the application. Upon the Department's approval of a site under 310 CMR 15.417, the applicant shall obtain a Disposal System Construction Permit from the local approving authority.

(3) The Department shall not approve under 310 CMR 15.417 any site located within a nitrogen sensitive area.

(4) The Department and the local approving authority shall impose such conditions as they deem appropriate for the protection of public health and safety and the environment. Any approval under 310 CMR 15.417 shall include a monitoring plan which includes at least an annual inspection of the system for at least the first seven years of operation.

(5) The owner or operator shall provide written notice to any new owner or operator that the system has been constructed pursuant to 310 CMR 15.417. Such notice shall include notice of the general conditions and any special conditions applicable to the system.

(6) No applicant shall be deemed to be entitled to selection of his or her site under 310 CMR 15.417, and the selection determination shall not be subject to the review process set forth in 310 CMR 15.422. A rejected applicant may file an application for a Disposal System Construction Permit pursuant to 310 CMR 15.020, and if necessary may seek a variance pursuant to 310 CMR 15.410 through 15.415.

(7) As provided at 310 CMR 15.245(1), variances from percolation rate pursuant to this section 310 CMR 15.417 shall not be required for percolation rates between 30 and 60 minutes per inch after January 1, 2004.